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ABSTRACT

Student course selection under a new curriculum at the State University of New York College at Oswego was studied. A second study objective was to determine whether there were differences in breadth of study between students who differed in academic promise as freshmen. Four years after entering the college, over half the students in the class of 1975 had earned a bachelor's degree. Male high-promise students (the top seven percent of entering freshmen) persisted to graduation at the highest rate, and female high-promise students experienced the lowest persistence rate. High-promise students majored in the physical sciences, mathematics, and communications studies significantly more often than did the regular undergraduates in their class. Biology, education, foreign languages, and social sciences (excluding psychology) attracted relatively few high-promise students. There was no significant difference between the high-promise and regular students in the selection of electives and general distribution requirements from each of 15 disciplines. First semester grade point average was determined to be an excellent predictor of cumulative grade point average. (SW)

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Research Report

Project Electives of Gifted and Regular Students Under the New Curriculum

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Project Electives of Gifted and Regular Students

Introduction

The new curriculum at Oswego has been in effect for over four years. Some now wonder if the students who graduated last year had used the flexibility of the new degree requirements to select electives over a broad or narrow range of disciplines.

This study has attempted to answer a few questions about student course selection under these changed conditions. It also attempts to discover if there are differences in breadth of study between students who differed as freshmen in academic promise.

A study such as this may be able to supply facts which faculty and administration can use in deliberations concerning academic policy concerned with undergraduate study for a degree.

There are many routes to a liberal education. The College at Oswego will continue to exercise legitimate care and concern about the degree to which its students sample widely among the traditional academic disciplines. Such selection patterns may be regarded as indicators that our students are obtaining a truly liberal education.

Procedure

One hundred eighty-eight student records were selected from among students (S's) who entered as freshmen in 1971 and had graduated or were still enrolled in the fall of 1975. They constituted our total sample and were comprised of nearly equal numbers of male and female members.

Seventy-three of the total sample S's were selected because they had earned high school average grades which placed them in the top seven percent (7%) of entering Oswego freshmen. The rest of the S's (N=115) were picked randomly from the remaining 93%. Sampling began with 358 entering freshmen student names but attrition over the four intervening years accounted for the smaller number studied.

High school average and other background information was posted and key-punched into computer cards for the total sample.

Each S's college transcript then provided the main data of interest. Every course the student had taken at Oswego or elsewhere was classified according to the Higher Education General Information Survey system (HEGIS) and tallied into his record (physical education practicals courses were excluded). The frequency with which each S had taken courses in each of the 15

HEGIS disciplines at Oswego were now made available for analysis (see Appendix for academic subjects in HEGIS discipline categories).

Results

The findings will be easier to understand if they are presented as six separate aspects. The aspects or questions they answer are:

1. To what extent did students who entered as freshmen in 1971 persist to degree attainment?

2. With what frequency did S's in the sample take courses in the 15 HEGIS disciplines?

3. What major fields of study attracted high promise S's more often than regular S's?

4. How did high promise S's differ from their regular cohorts in the number of courses they took in their major field?

5. To what extent did high promise and regular S's elect courses outside their major areas?

6. Finally, how did grade point averages, both initial and final, compare between high promise and regular and between men and women S's?

1. Persistence to Degree Attainment

Of 358 freshmen admitted and registered for course work in the fall semester, 1971, 170 or 47% had left Oswego without a degree within nine semesters. More females than males left early and more of the regular than high promise students also failed to take a bachelor's degree at Oswego.

TABLE ONE (below) also shows that fewer than half of the high promise women (48.6%) had obtained an Oswego degree four years after entering this college.

Table 1

Proportions of Graduates out of Total Entrants

	Male	Fema..	Total
High Prom.	.594	.486	.536
Regular	.500	.535	.518
TOTAL	.535	.516	.525

2. What Subject Matter They Studied

TABLE TWO shows that the S's took, in the aggregate, more courses in the social sciences (average: 8.2 courses) than in any other discipline area. This was true despite the fact that there were more education majors (58) than social science majors (36) in the total sample.

Even if we assume that the social science majors were all preparing to become high school teachers and took 30 hours in social sciences and that all the education majors took 10 courses in the social sciences also, that would leave an average of over 17 courses each for the remaining 94 students in the total sample. See appendix for listing by Oswego general education headings.

3. Majors of High Promise and Regular S's

One would wonder which major areas students with higher than usual high school grade averages would choose for their college majors. TABLE THREE shows the numbers in our sample of both the latter and the average S's, and the proportions of high promise students who chose each of the 13 discipline majors at Oswego.

Mathematics and the physical sciences both are dominated by the more promising high school graduates in this class. Letters and communications studies had a few more of that group for majors. Biology and foreign languages, surprisingly, perhaps, had relatively the same low proportions of high promise students as did education.

4. Courses Taken in Major Area

One may measure the implied liberality of an education students obtained by counting the number of courses taken in their major discipline. As TABLE FOUR is inspected it is important to remember that the NECIS discipline aggregate specific disciplines in somewhat arbitrary ways. For instance, psychology is a distinct discipline in this scheme while the physical sciences embraces chemistry, physics, geology, meteorology, oceanography, and earth science (see appendix). To some readers, the latter grouping may be comprised of far more disparate studies than the range of the branches in psychology.

With this caution in mind, we see that TABLE FOUR displays the average numbers of courses the two kinds of S's took while earning degrees. Note that courses, not credit hours are recorded in this table.

The overall average for each group indicates that, in general, the high promise student tended to take fewer courses on the average in his major than did his regular cohort (13.4 versus 15.4)

It is interesting to find that high promise S's took more courses in their major in the disciplines of biology, business administration, fine and applied arts, and foreign languages than did regular S's majoring in the same fields.

5. Distribution of Electives between Two Kinds of S's

TABLE FIVE shows the total and average number of courses taken in each of 15 disciplines by non-majors. Overall, it is apparent that there is no significant difference between the two groups of S's in the frequency with which they chose electives or filled general distribution or cognate requirements from each of the 15 disciplines. The +1.00 value in the difference column does not loom so large when one recalls that there were twice as many high promise physical science majors (who would necessarily have more mathematics cognates) than regular S's (see table three).

The average number of courses in each non-major discipline was fewer than two, 1.84 and 1.65, respectively for high promise and regular S's.

6. Grade Point Averages Earned

Many studies on grades earned in college are confirmed by the results with the present class. TABLE SIX shows that first semester grade point average (GPA) is an excellent predictor of cumulative GPA. The rank order of initial GPA is identical to that for the cumulative GPA (compare columns headed one (1) and "cumul.").

S's who begin college with higher high school averages obtain both higher first semester GPA's and cumulative GPA's. The fact that female freshmen typically have higher high school grade averages than their male classmates is reflected in the higher GPA's between sexes within each of the two subgroups (compare row one with two and row three with four respectively).

Conclusion and Summary

Four years after entering Oswego, over half the native S's in the class of 1975 had earned a bachelors degree. No startling pattern emerges. Male high promise students persisted to graduation at the highest rate of the four ability by sex categories. Meanwhile, high promise women experienced the lowest persistence rate.

The high promise students chose to major in the physical sciences, mathematics, and communications studies with significantly greater frequency than the regular undergraduates in their class. Biology, education (I.A. and elementary education) foreign languages, and social sciences (not including psychology) attracted relatively few high promise people.

High promise students took one (1) more elective course in mathematics, six-tenths (.6) more courses in foreign languages and psychology than did regular students.

Grade point averages and cumulative averages remained in the same relative order through four years of college as they had through high school for the four categories of students. A separate study by Robert Schell using these data shows that high school averages is the single most powerful predictor of college grade achievement.

Further questions

1. Why do female students who showed excellent promise leave Oswego without bachelors degrees in such large numbers?

2. Why do our students neglect the electives available in the natural sciences general education area?

3. Why do elective courses in communications studies (English writing and broadcasting) attract so very few students of either category of potential?

4. Why are electives in area studies and public affairs (public justice) hardly ever included in a student's schedule?

TABLE 2

Courses Taken by Whole Sample

Code	HEGIS Discipline	Total	Aver.	Rank	SD	# Students Majoring in Discipline
03	Area Studies	15	0.08		.34	1
04	Biology	392	2.09		3.61	14
05	Business Admin.	192	1.02		2.83	9
06	Commun. Studies	55	0.29		1.59	3
07	Computer Science	204	1.09		2.33	7
08	Education	1014	5.39	2	6.21	58*
10	Fine & Apl. Arts	981	5.22	3	5.87	10
11	Foreign Lang.	326	1.73		3.83	5
12	Health Profs.	94	0.50		0.60	-
15	Letters	764	4.06	4	3.27	9
17	Mathematics	500	2.66		3.14	12
19	Phys. Science	623	3.31	5	4.06	9
20	Psychology	535	2.85		3.03	13
21	Public Affiars	6	0.03		0.20	-
22	Social Science	1548	8.23	1	6.93	36
00	Undecided					2
	TOTAL	7249	40.00			188

* Includes only elementary education and industrial arts majors. Secondary education majors are assigned to their academic discipline categories.

TABLE 3

Major Areas Chosen by High Promise and Regular Students

Code	NEGIS Discipline	Prop. HP/T*	No. HP S's	No. Reg. S's	TOTAL S's
03	Area Studies	.00	0	1	1
04	Biology	.29	4	10	14
05	Business Admin.	.44	4	5	9
06	Commun. Studies	.67	2	1	3
07	Computer Science	.43	3	4	7
08	Education	.29	17	41	58
10	Fine & Apl. Arts	.40	4	6	10
11	Foreign Lang.	.20	1	4	5
15	Letters	.56	5	4	9
17	Mathematics	.67	8	4	12
19	Phys. Science	.78	7	2	9
20	Psychology	.46	6	7	13
22	Social Science	.19	7	29	36
00	Undecided	.50	1	1	2
	TOTAL	.37	69	119	188

* HP/T = Ratio of High Promise S's out of total S's majoring in a given discipline.

Note: Four areas are dominated by high promise students: Communication Studies, Letters, Mathematics, and Physical Sciences. Since the overall ratio of high promise to total students is .37:1.00, disciplines with proportions of high promise S's greater than that had attracted more such S's than mere chance would account for.

TABLE 4

Number, Averages, and Variability in Major Courses for Gifted and Regular Students Compared

		High Promise S's				Regular S's				
Code	NEGIS Discipline	Total	Aver.	No. S's	S.D.	Total	Aver.	No. S's	S.D.	Diff.*
03	Area St.	0	0.00	0	0.00	-Faulty Data-		1	0.00	N.A.
04	Biology	62	15.50	4	4.43	128	12.80	10	3.39	+2.70
05	Bus. Adm.	49	12.25	4	3.10	53	10.60	5	1.52	+1.65
06	Comm. St.	30	15.00	2	0.00	-Faulty Data-		1	0.00	N.A.
07	Comp. Sci.	32	10.67	3	2.08	44	11.00	4	3.37	-0.33
08	Education	184	10.82	17	3.40	577	14.07	41	4.40	-3.25
10	F & A Arts	83	20.75	4	6.95	111	18.50	6	3.56	+2.25
11	For. Lang.	23	23.00	1	0.00	82	20.50	4	2.38	+2.50
15	Letters	66	13.20	5	5.50	63	15.75	4	1.50	-2.55
17	Math.	77	9.63	8	5.42	53	13.25	4	1.26	-3.62
19	Phys. Sci.	120	17.14	7	5.34	38	19.00	2	2.83	-1.86
20	Psychology	46	7.67	6	3.78	90	12.86	7	3.13	-5.19
22	Soc. Sci.	139	19.86	7	3.80	565	19.48	29	5.07	+0.38
	TOTAL	911	13.40	68		1804	15.30	118		-2.01

* Diff. = Average number of courses taken by high promise S's minus the average for regular S's. Positive quantities mean the H.P. S's took more courses in their major than did their regular classmates.

Note: Two students had "undecided" recorded as their major, hence totals for number of students sum only to 186.

TABLE 5

Distribution of Electives by NEGIS Discipline Area by High Promise and Regular Students

Code	NEGIS Discipline	High Promise S's: Total Elected	High Promise S's: Aver. No. Crses/Stdnt	High Promise S's: No. S's	Regular S's: Total Elected	Regular S's: Aver. No. Crses/Stdnt	Regular S's: No. S's	Diffs. in Av. # Taken
03	Area St.	3	.04	69	10	.09	118	-.04
04	Biology	83	1.28	65	119	1.09	109	+.19
05	Bus.& Man.	33	.51	65	57	.51	114	.00
06	Comm. St.	7	.10	67	18	.15	118	-.05
07	Comp. Sci.	46	.70	66	82	.71	115	-.01
08	Education	101	1.94	52	152	1.95	78	-.01
10	F & A Arts	274	4.22	65	513	4.54	113	-.32
11	For. Lang.	108	1.59	68	113	.98	115	+.61
12	Health	36	.52	69*	58	.49	119*	+.03
15	Letters	233	3.64	64	402	3.50	115	+.14
17	Math.	169	2.77	61	201	1.77	115	+1.00
19	Phys. Sci.	160	2.58	62	305	2.61	117	-.03
20	Psychology	168	2.67	63	231	2.06	112	+.61
21	Pub. Afrs.	2	.03	69*	4	.03	119*	.00
22	Soc. Sci.	357	5.76	62	487	5.41	90	+.35
	TOTAL	1780		967	2752		1667	
	AVERAGES		1.84			1.65		+.19

* No students may major in this discipline, therefore the entire sample is shown.

NOTE: The numbers in Total Elected columns are merely courses not in a in a student's major discipline. Cognate disciplines, where required by a particular curriculum, will "cause" certain students to seem to elect that cognate discipline more frequently. e.g. Physical science majors are required to take a certain amount of specific course work in mathematics, etc.

TABLE 6

Grade Point Averages of Two Groups of Students

	Semester					
	1	2	3	4	Cumul.	N
1. Reg. Male	2.51	2.43	2.67	2.73	2.75	55
2. Reg. Female	2.70	2.80	2.88	2.84	2.95	64
3. H. P. Male	2.90	2.87	2.88	2.96	3.01	37
4. H. P. Female	3.17	3.09	3.14	3.15	3.29	32

Appendix A

HEGIS Discipline and Subject Equivalents

Code	HEGIS Discipline	Academic Subject Areas (Oswego)
03	Area Studies	American Studies
04	Biological Sciences	Biology Botany Zoology
05	Business & Management	Business Administration
06	Communications	Broadcasting English Writing
07	Computer Science	Computer Science
08	Education	Education Educational Psychology Elementary Education Industrial Arts Reading Education School Psychology & Counseling Secondary Education Speech Education
10	Fine & Applied Arts	Art Dance Interpretation (speech) Music Public Address Theatre
11	Foreign Languages	(all courses in foreign languages)
12	Health Professions	Health Science
15	Letters	College Reading English Linguistics Philosophy (Psych. 470) Speech
17	Mathematics	Mathematics
19	Physical Sciences	Astronomy Chemistry Earth Science Geology Meteorology Oceanography Physics

Appendix A (cont'd.)

Code	HEGIS Discipline	Academic Subject Areas (Oswego)
20	Psychology	Psychology
21	Public Affairs & Services	Public Justice
22	Social Sciences	Anthropology Economics Geography History Political Science Sociology

Appendix B

Courses Taken by Whole Sample Listed by Oswego General Education Requirements and Department

Faculty/Student Workload in Fall, 1972

Gen. Ed. Category	# Courses by HEGIS Category	Proportion	SSH Generated in Applicable Departments	Proportion
Humanities	2126	.358	26,817	.349
Social & Beh. Sci.	2098	.353	29,660	.386
Natural Sci., etc.	1719	.289	20,325	.265
TOTAL	5943	1.000	76,802	.994

NOTE: Department student semester hours (SSH) generated and their proportions are based on Oswego academic departmental experience. Since there are occasional departments which offer courses in more than one HEGIS discipline the two sets of proportions are not identical.

This table is offered as evidence that the small sample of S's used in this study were fairly representative of the Oswego student population.